## (19) World Intellectual Property Organization International Bureau



## 

(43) International Publication Date 4 August 2005 (04.08.2005)

PCT

## (10) International Publication Number WO 2005/071027 A1

(51) International Patent Classification7:

C09D 11/10

(21) International Application Number:

PCT/US2005/001245

- (22) International Filing Date: 14 January 2005 (14.01.2005)
- (25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/536,361

14 January 2004 (14.01.2004) U-

- (71) Applicant (for all designated States except US): SUN CHEMICAL CORPORATION [US/US]; 222 Bridge Plaza South, For Lee, NJ 07024 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): LAKSIN, Mikhail [US/US]; 29 Kincaid Road, Boonton, NJ 07005 (US). CHATTERJEE, Subhankar [US/US]; 60 Norma Road, Hampton, NJ 08827 (US). BIRO, David, Anthony [CA/US]; 42 Cayuga Ave., Rockaway, NJ 07866 (US).
- (74) Agent: MEILMAN, Edward, A.; Dickstein Shapiro Morin & Oshinsky LLP, 1177 Avenue of the Americas, 41st Floor, New York, NY 10036-2714 (US).

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EB, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: HYBRID ENERGY CURABLE SOLVENT-BASED LIQUID PRINTING INKS

(57) Abstract: The present invention provides a liquid printing ink that produces high quality flexographic or gravure printing images that have excellent solvent and abrasion resistance. In addition, the printing ink of the invention has high re-solubility, even after complete drying, upon contact with the liquid vehicle of the same ink, thereby preventing clogging of the printing plate, anilox or gravure cylinders over time. These characteristics of the printing ink are obtained by preparing a hybrid ink in which conventional organic solvent and/or water-based liquid inks are mixed with energy curable monomers and/or oligomers of resins and, optionally, a photoinitiator. After drying the ink, the printed images are exposed to an actinic radiation so that highly cross-inked polymers are formed in the printed images, which become water, chemical and abrasion-resistant.

